

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions of claims in the application.

1. (Original): A cleaning agent for a substrate comprising [I] an organic acid having at least one carboxyl group and /or [II] a complexing agent, and [III] an organic solvent selected from the group consisting of (1) monohydric alcohols, (2) alkoxyalcohols, (3) glycols, (4) glycol ethers, (5) ketones and (6) nitriles.

2. (Original): The cleaning agent according to Claim 1, wherein the cleaning agent contains [I] the organic acid having at least one carboxyl group and [II] the complexing agent.

3. (Original): The cleaning agent according to Claim 1, wherein the cleaning agent is an aqueous solution.

4. (Original): The cleaning agent according to Claim 1, wherein the organic solvent is one selected from the group consisting of methanol, ethanol, isopropyl alcohol, 2-methoxyethanol, 2-(2-butoxyethoxy)ethanol, ethylene glycol, diethylene glycol monomethyl ether, acetone and acetonitrile.

5. (Original): The cleaning agent according to Claim 1, wherein the complexing agent is one selected from the group consisting of a compound having at least one phosphonic acid group in a molecule, and an ammonium salt or an alkali metal salt thereof.

6. (Original): The cleaning agent according to Claim 5, wherein the compound having at least one phosphonic acid group in a molecule is one selected from the group consisting of nitrogen-containing polyphosphonic acids having 1 to 6 nitrogen atoms and 1 to 8 phosphonic acid groups in a molecule, an aryl polyphosphonic acid, an alkylene polyphosphonic acid, alkane polyphosphonic acids which may have a hydroxyl group, and an ammonium salt or an alkali metal salt thereof.

7. (Original): The cleaning agent according to Claim 5, wherein the compound having at least one phosphonic acid group in a molecule is one selected from the group consisting of nitrogen-containing polyphosphonic acids having 1 to 6 nitrogen atoms and 1 to 8 phosphonic acid groups in a molecule, alkane polyphosphonic acids which may have a hydroxyl group, and an ammonium salt or an alkali metal salt thereof.

8. (Original): The cleaning agent according to Claim 6, wherein the nitrogen-containing polyphosphonic acids having 1 to 6 nitrogen atoms and 1 to 8 phosphonic acid groups in a molecule is one selected from the group consisting of an alkylamino poly(alkylphosphonic acid), a mono- or polyalkylenepolyamine poly(alkylphosphonic acid), a nitrilo-poly(alkylphosphonic acid), and an ammonium salt or an alkali metal salt thereof.

9. (Original): The cleaning agent according to claim 1, wherein the complexing agent is one selected from the group consisting of:

ethylenediaminebis(methylenephosphonic acid) [EDDPO];
ethylenediaminetetrakis(ethylenephosphonic acid);
ethylenediaminetetrakis(methylenephosphonic acid)
[EDTPO]; hexamethylenediaminetetrakis(methylenephosphonic acid);
isopropylenediaminebis(methylenephosphonic acid);
isopropylenediamintetra(methylenephosphonic acid);
propanediaminetetra(ethylenephosphonic acid)[PDTMP];
diaminopropanetetra(methylenephosphonic acid)[PDTPO];
diethylenetriaminepenta(ethylenephosphonic acid)
[DEPPO];
diethylenetriaminepenta(methylenephosphonic acid)
[DETPPO];
triethylenetetraminehexa(ethylenephosphonic acid)
[TETHP];
triethylenetetraminehexa(methylenephosphonic acid)
[TTHPO];
nitrilotris(methylenephosphonic acid)[NTPO];
ethylidenediphosphonic acid;
1-hydroxyethylidene-1,1'-diphosphonic acid [HEDPO];
1-hydroxypropylidene-1,1'-diphosphonic acid; and
1-hydroxybutylidene-1,1'-diphosphonic acid.

10. (Original): The cleaning agent according to Claim 1, wherein the organic acid is an organic acid having 2 or 3 carboxyl groups.

11. (Original): The cleaning agent according to Claim 1, wherein the organic acid is a dicarboxylic acid or an oxycarboxylic acid.

12. (Original): The cleaning agent according to Claim 11, wherein the oxycarboxylic acid is an oxydicarboxylic acid or an oxytricarboxylic acid.

13. (Original): The cleaning agent according to Claim 11, wherein the dicarboxylic acid is one selected from the group consisting of an oxalic acid, a malonic acid, a succinic acid, a glutaric acid, an adipic acid, a pimelic acid, a maleic acid, a fumaric acid and a phthalic acid.

14. (Original): The cleaning agent according to Claim 11, wherein the oxycarboxylic acid is a malic acid, a tartaric acid, or a citric acid.

15. (Original): The cleaning agent according to Claim 1, wherein the organic acid is a dicarboxylic acid or an oxycarboxylic acid; the complexing agent is one selected from the group consisting of nitrogen-containing polyphosphonic acid having 1 to 6 nitrogen atoms and 1 to 8 phosphonic acid groups in a molecule, alkane polyphosphonic acids which may have a hydroxyl group, and an ammonium salt or an alkali metal salt thereof; and the organic solvent is one selected

from the group consisting of monohydric alcohols, alkoxyalcohols, glycols, glycol ethers, ketones and nitriles.

16. (Original): The cleaning agent according to Claim 1, wherein pH of the cleaning agent is 0.5 to 6.5.

17. (Original): The cleaning agent according to Claim 1, wherein the substrate is a semiconductor.

18. (Original): The cleaning agent according to Claim 1, wherein the substrate is one with metallic wiring provided thereon.

19. (Original): The cleaning agent according to Claim 18, wherein the metallic wiring is a copper wiring.

20. (Original): The cleaning agent according to Claim 1, wherein the substrate is one treated with a slurry containing benzotriazole or a derivative thereof.

21. (Original): A cleaning method for a surface of substrate, which comprises treating the surface of substrate with the cleaning agent according to Claim 1.

22. (Original): The cleaning method according to Claim 21, wherein the treatment with the cleaning agent is dipping the surface of substrate in the cleaning agent according to Claim 1 or spraying said cleaning agent on the surface of substrate.

23. (Original): The cleaning method according to Claim 21, wherein physical cleaning is further used in combination.

24. (Original): The cleaning method according to Claim 21, wherein the substrate is one after subjecting to a chemical mechanical polishing process.

25. (Currently amended): The cleaning [[agent]] method according to Claim 21, wherein the substrate is a semiconductor.

26. (Original): The cleaning method according to Claim 21, wherein the substrate is one with metallic wiring provided thereon.

27. (Original): The cleaning method according to Claim 26, wherein the metallic wiring is a copper wiring.

28. (Original): The cleaning method according to Claim 21, wherein the substrate is one after subjecting to the treatment process with a slurry containing benzotriazole or a derivative thereof.